

Attributes	Description
<i>Instrument</i>	
Acronym	TraceGas
Full Name	Trace Gas – CO ₂ , CH ₄ , CO
<i>ResponsibleParty</i>	
Name	Glenn Diskin
Affiliation	NASA Langley Research Center
Contact Info	757-864-6268, glenn.s.diskin@nasa.gov
<i>ValidPeriod</i>	Aug. 03 – Oct. 05, 2019
<i>MeasurementVariables</i>	CO ₂ _ppm, CO ₂ , carbon dioxide dry mass fraction CH ₄ _ppm, CH ₄ , methane dry mass fraction CO_ppm, CO, carbon monoxide dry mass fraction
<i>TimeSynchOrigin</i>	UTC time synched by correlation of CH ₄ to NASA LaRC DLH water vapor 1 Hz data, PI Glenn Diskin
<i>Manufacturer/Developer</i>	PICARRO, Inc.
<i>Model Number</i>	G2401-m
<i>Date/Serial Number</i>	2183-CFKBDS2177 (all data)
<i>MeasurementUncertainty</i>	
Overall	N/A
Accuracy (1 sigma)	0.1 ppm (CO ₂), 0.002 ppm (CH ₄), 2% (CO)
Precision (1 sigma at 0.4 Hz)	0.1 ppm (CO ₂), 0.001 ppm (CH ₄), 0.005 ppm (CO)
<i>ObservableRange</i>	CO ₂ : 0 – 1000 ppm, CH ₄ : 0 – 20 ppm, CO: 0 – 5 ppm
<i>ObservingMethod</i>	Near-IR cavity ringdown absorption spectroscopy

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<i>ObservingMethodDetail</i>	Instrument measures each gas sequentially, plus H2O for an internal reference. Measurement times: CO2 ~ 0.3 sec; CH4 ~ 0.5 sec; CO ~ 1 sec; H2O (ref) ~ 0.7 sec. Cavity sampling pressure: 140 Torr. Net sampling rate: 0.4 Hz. Cell e-folding response time > 0.2 Hz
<i>ObservingMethodReference</i>	B.C. Baier et al., "Multi-species assessment of factors influencing regional CO2 and CH4 enhancements during the wintertime ACT-America campaign", JGR-Atmos, 125 (2018). DOI: 10.1029/2019JD031339 DiGangi et al., "Seasonal Variability in Local Carbon Dioxide Fire Emissions over CONUS using Airborne In-Situ Combustion Efficiencies", in prep (2020).
<i>CalibratingMethod</i>	Standard displacement (inlet overflow) calibration
<i>CalibrationStandard</i>	WMO Traceable Standards (NOAA ESRL) – CO2: WMO-CO2_X2007; CH4: WMO-CH4_X2004A; CO: WMO-CO_X2014A
<i>CalibrationLog</i>	Single standard calibration every 1 hour during the flight; 3-point standard ground calibration biweekly
<i>samplingStrategy</i>	In-situ measurements of ambient air, direct measurement of concentration
<i>sampleTreatment</i>	Measured air is dried and compressed continuously
<i>sampleTreatmentDescription</i>	Air is sampled at 1.5 SLM and dried with high flow Nafion dryers, then the air is compressed to a constant 800 Torr. Part of this flow is sampled at ~0.4 SLM by the instrument.
<i>samplingProcedure</i>	Rosemount 4" inlet with 8" standoff from P-3B probe window located at Flight Station 740R (starboard side), ~5 ft ¼" OD stainless inlet line
<i>samplingProcedureDescription</i>	N/A
<i>DataProcessing</i>	All species corrected with calibration curve calculated with both ground and inflight calibration events, filtered for artifacts
<i>softwareDetails</i>	N/A
<i>DataReportingInformation</i>	Dry mole fraction at 0.4 Hz
<i>Subequipment</i>	

